RDT

Brief

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Highway Rail Crossing Project Selection

Missouri has over 4000 Highway/Rail crossings. The Missouri Department of Transportation (MODOT) currently uses an Exposure Index formula to prioritize crossings for safety upgrades at rail-highway crossings. The EI formula was developed in the 1970's and has not changed since then. This study evaluates the effectiveness of the EI formula and examines the possibility of adoption of an alternative formula for use in Missouri for prioritizing crossings for safety improvements.

A list of models used by different states to prioritize rail-highway grade crossings was assembled. The source of this list is a report produced by the University of Illinois in September 2000 (Elzohairy and Benekohal, 2000). Seven models, which are generally used by most of the states, were selected for study.

Following the identification of models for study, a panel of officials associated with MoDOT, the U.S. Department of Transportation, and Railroad Companies was assembled to participate in a one day workshop. The panel was asked to address several questions:

- What are the objectives of a grade crossing model?
- What are the key characteristics of a 'good' grade crossing model?
- What key variables should be present in a 'good' grade crossing model?
- How do we identify the "best" model?

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At the end of the workshop, eight criteria, along with their relative importance, were identified that could be used to select a "best" model. These criteria and their associated weights were combined into an index value that was then used to rank the models.

The most important criterion was the accuracy of each model in predicting the ranking of crossings in Missouri. In order to assess this performance, data were obtained for 12 representative crossings (6 with passive control and 6 with flashing lights) across the state from the Missouri Crossing Inventory. MoDOT staff then ranked these sites within each category to establish baseline rankings. The ability of each of the models under consideration to replicate these baseline rankings was quantified with a simple Spearman rank correlation coefficient.

After the models were analyzed and final indices developed, the panel of experts was assembled again to review and select a potential replacement model for the EI. In preparation for this second workshop, a modification of the EI formula was also developed. At the end of this second workshop, the panel recommended the research team conduct sensitivity analyses on modifying the Kansas Design Hazard Rating model for possible use in Missouri.

Subsequent analyses were inconclusive in determining potential modifications to the Kansas Model. However, it is our finding that consideration should be given to replacing the EI with a form of the Kansas model and that further research be conducted on defining the necessary modifications to the Kansas Model.

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